

## ATTACHMENT A Remarks

Claims 11-15 and 17-22 are pending in the present application with claims 11-14 and 21-22 withdrawn from consideration. By this amendment, Applicant has amended claim 15 and canceled claims 16, 17 and 19. Applicant respectfully submits that the amendment will place the claims in condition for allowance based on the discussion which follows, and that entrance of the amendment is thus appropriate.

Claims 15, 18, 19 and 20 were rejected under 35 U.S.C. § 103(a) as being unpatentable over Gabrick in view Yanagida or Sony Corp.

In order to more clearly recite Applicant's invention, Applicant has amended independent claim 15 to include the subject matter of now canceled claim 19. Applicant respectfully submits that the prior art fails to teach or suggest the novel cleaning method now recited in claim 15.

The present cleaning method uses  $\text{CF}_3\text{CF}=\text{CF}_2$  as a chamber cleaning gas which provides for unexpected chamber cleaning advantages over the prior art. Enclosed herewith as Attachment C is a complete English Translation of the Japanese document (hereinafter "document") which was included with the Amendment filed July 8, 2005.

According to the document, about 20 types of gases including substances having carbon atoms and fluorine atoms were surveyed. The 20 types of gasses will include  $\text{CF}_4$ ,  $\text{C}_2\text{F}_4$ ,  $\text{C}_4\text{F}_6$ , etc. other than  $\text{COF}_2$ ,  $\text{C}_3\text{F}_6$ ,  $\text{c-C}_4\text{F}_8$ ,  $\text{C}_3\text{F}_8$ ,  $\text{C}_2\text{F}_6$  which are shown in Figs. 1 and 2.

As to the results of Fig.1, efficacy of  $\text{C}_3\text{F}_8$  and  $\text{c-C}_4\text{F}_8$  was confirmed by the bond dissociation energy, and the efficacy of  $\text{C}_3\text{F}_6$  and  $\text{c-C}_4\text{F}_8$  was confirmed by the

oxidization decomposition reaction energy. Further, as shown in the translation of the document (page 3, lines 19-24), the low GWP and the low risk are compatible in  $C_3F_6$  gas. For  $C_3F_8$  and  $c-C_4F_8$  whose efficacy had been confirmed by the bond dissociation energy in the cleaning performance shown in Fig. 1, the GWP was high although the scale of risk was very low.

$C_3F_6$  is selected from about 20 types of gasses as a best cleaning gas, the cited references do not disclose that  $C_3F_6$  is much better than the prior cleaning gas ( $C_2F_6$ ) and other candidate gasses consisting of carbon and fluorine atoms when considering a total evaluation of all cleaning gas properties.

Specifically, neither Yanagida or Sony teaches or suggests that  $C_3F_6$  is a better cleaning gas than the convention CVD chamber cleaning gases, namely  $C_2F_6$ , with regard to cleaning gas properties, let alone properties for cleaning/treating a plasma CVD chamber. Moreover, Yanagida and Sony fail to provide any motivation for one of ordinary skill in the art to substitute  $C_3F_6$  for  $C_2F_6$  as a chamber cleaning gas as the references do not disclose  $C_3F_6$  would be better as a cleaning since neither provide a total evaluation of all relevant properties (time, selectivity, etc.) which comprise the cleaning properties of a cleaning gas.

The fact that the Izaki study was conducted to test various cleaning gases provides evidence that it would not have been obvious, absent the study, to know which gas provides optimal cleaning. If it would have been obvious to one of ordinary skill in the art to use  $C_3F_6$ , such a study would not have been necessary. Accordingly, the present cleaning method which uses  $C_3F_6$  with unexpected enhanced cleaning

properties provides evidence that the present method is not obvious in view of the prior art based on secondary consideration of non-obviousness.

In view of the foregoing, Applicant respectfully submits that claims 15, 18 and 20 are not obvious in view of the prior art of record. Therefore Applicant respectfully requests that the Examiner enter the enclosed amendment and withdraw the 35 U.S.C. § 103(a) rejection to the claims.

In view of the foregoing, the Applicant respectfully submits that upon entrance of the amendment, the application will be placed in condition for allowance, and such action is earnestly solicited.

**END REMARKS**